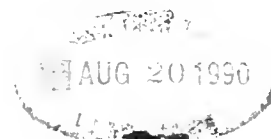


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INFLATION ADJUSTED FUNDS FLOW STATEMENTS

by

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Comments welcome

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One of the more unfortunate myths that we accountants have helped to perpetuate is that capital maintenance is in itself and of necessity a good thing. We have achieved this most misleading result by a continual emphasis on the calculation of net income as something entirely separate from capital without an equal stress on the hazards of this calculation or the dynamics of capitalism.

The origin of this misplaced emphasis almost certainly goes back to textbook models of the firm. These models are invariably static, i.e., they analyse the conditions necessary for equilibrium at a point in time. There is no past or future in a static world, only a present.

But time is of the essence of things in the real world. It takes time to produce goods for sale, time to distribute them, and time to receive payment. If all this did happen instantaneously, there would be no need for accounting, let alone an accounting problem. All our problems involve time at their very heart. How to depreciate, how to match expenses, when to recognize revenue are all matters of timing.

A static model is, therefore, totally unsuited to capturing the nature of accounting. We have to have a dynamic model, one that introduces the parameter of time. Unfortunately, the simplest of these and the one that Hicks (1946) was grappling with when he made his very influential definition of income in terms of capital maintenance, is the stationary model. This assumes that the firm has a balanced stock of assets, that tomorrow is identical to yesterday, that there is no growth, no net investment, no inflation, no technological obsolescence, in short, no change.

Clearly the stationary model is as inadequate as the static model in capturing the essence of the real world and the fundamental nature of the accounting problem. In such a world allocation is never a problem, LIFO is identical to FIFO, straight line to accelerated depreciation.

Holding gains, monetary losses, and foreign exchange fluctuations do not exist. In a word, accounting would not exist.

The stationary model assumes that each year's investment program is the same. It is a well known fact, and intuitively obvious, that in such a world the annual depreciation charge will equal the investment expenditure on new assets. Thus, the depreciation expense makes sense in that once deducted the remaining funds are available for distribution. Stated otherwise, depreciation equals investment, so that net income equals funds available for common shareholders. Or, put yet another way, the intent of management is to maintain the firm, as is, in a stationary world. The charge to depreciation reflects this intent. Net income may, and indeed should, be paid out as dividends.

But, the world is not stationary. Firms grow and firms decline. Some should grow and others should decline. British Leyland, for example, has vast excess capacity and must shrink to a size appropriate to its predicted market. Worldwide, all steel companies are burdened with too much plant. They too must shrink until demand equates supply. South African gold mines are a classic example of a shrinking or declining asset.

In all these cases, it is pure fiction to maintain existing capacity whether this be financial, physical, or business. We might, in pursuit of our unfortunate myth, calculate a "net income" number that purports to enable management to maintain its capacity. This number, however, is totally irrelevant to any managerial decision. To take but one example, management of a gold mine would be criminally foolish to limit payment of dividends to such a net income number. They should, and usually do, pay out all available funds.

By the same token, firms in high growth, high return areas

have a legal obligation to do more than simply maintain the assets of the firm. Again the net income number may be calculated, but is totally irrelevant to any managerial decision. This number is not available for dividends, and should not be, given the basic tenets of a capitalist economy.

Why then do we calculate net income? The Financial Accounting Standards Board (1978) and others suggest that present net income is a good predictor of future cash flows. But, this can only be true if the firm is in a stationary state. Moreover, it assumes an absence of inflation. If either assumption be false, the proposition simply cannot hold.

An alternative answer would seem to be that it has become a tradition to do so. We have grown so accustomed to using it as a measure of performance, both past and predicted, that we seldom stop to think about its potential value or lack thereof. Certainly the suggestion, implicit in its calculation, that capital maintenance is a necessary good is demonstrably false.

To lend weight to this assertion, let us restate the argument in a different form. Managerial accountants, although not financial accountants apparently, make much of sunk costs. The argument is that the implications of every decision lie in the future and only in the future. Bygones are bygones said the English economist, Stanley Jevons (1970). Monies that have been spent are irrevocable. All that matters now is what can be earned in the future and what incremental costs must be incurred to generate those earnings.

What this implies for management in its relation to investors is that at each point in time, but especially at the year end and in the annual report, it should state what it intends to do with the funds it currently has in hand. In an ideal world, management should be obliged to report to

shareholders at an annual general meeting say, what funds it has on hand, and just what it intends to do with those funds in the ensuing year.

There can be no justification for the management of a firm with excess capacity, in a declining industry, to retain earnings where cash is available to pay this out as dividends. Capital maintenance is no excuse for a paltry dividend when the firm must shrink. Net income in such circumstances is a most misleading figure.

What is true for the declining firm is true for all firms. Each year begins afresh and should begin with the question by shareholders, and an answer from management, what do you intend to do with the funds we have entrusted to your care. In a few cases, this will be "maintain the firm" and pay out the rest. In some cases, it will be "retain it all" for new net investment. In only a few cases then will capital maintenance be the answer and hence net income the relevant number.

All this is hardly radical or controversial - at least in theory. For this two reasons are immediate. The first is that management should retain funds only when the return the firm can earn exceeds that of the shareholders. This is a fundamental principle of the capitalist economic system. Funds should flow from inefficient producers to efficient producers. It is exceedingly disturbing to read in Baumol et al. (1970), that managers appear to escape the discipline of the market by retaining earnings and earning even negative returns on these retained funds.

The second has already been alluded to. Sunk costs are sunk and irrelevant to all decisions. This is a principle laid down in every managerial economics and accounting text. In particular depreciation is irrelevant to every decision. Even the two potential contra-examples of dividends and taxes support this view. Companies that base their dividend policy on historical depreciation may be reducing their capital unwittingly. And,

one of the most quoted grounds for replacement cost accounting is that depreciation as presently calculated fails to make allowance for the rising costs of new investment and hence serves as a drag on the economy.

All of the foregoing is made doubly important by the existence of inflation. Now we no longer have to concern ourselves only with the growth and decline in real terms of business enterprises, but also with the rising costs of new investment programs. Accumulated depreciation was never a fund, popular belief notwithstanding, to finance investment. It is even less, now that we face inflation, an adequate offset to funds from operations to permit reinvestment. Net income is not available to shareholders even if a firm really does intend to simply maintain its capital.

What is needed is a new statement. More explicitly stated, what is needed is a statement supplementary to the balance sheet, income statement, and statement of changes in financial position. This should at a minimum do two things. It should break out the effect of inflation both on net real assets and on net monetary assets. Secondly, it should involve reasonable assumptions about the direction of the firm that will enable the reader to intelligently assess the financial position of the firm relative to the future.

We have seen several attempts in this general area. The statement of changes in financial position (SCFP) was an earlier effort to draw out the pattern of funds flow independently of any assumptions of capital maintenance. Replacement cost accounting splits operating profits out from holding gains to reveal the effects of inflation. Rappaport (1979) has suggested the notion of distributable funds to capture growth and inflation.

None of these endeavors are entirely satisfactory and an entirely new statement is proposed here. This is a funds flow statement based on replacement cost type data and not an inflation-adjusted income statement.

To illustrate the nature of this statement and the similarities and dissimilarities between this and previous suggestions, I have created a fictitious company which we may dub the GSN Corporation.

GSN Corporation: GSN's income statement (Exhibit I) reports a 11% growth in sales and a 11% growth in net income for 1978 over 1977. The aftertax return on sales for 1977 was 6% and for 1978 was 6%. The numbers are not random. They assume a company that was stable and prices that were stable prior to 1977. Since then the company has begun to grow at a rate of 10% per annum in real terms. At about the same time inflation of 10% was experienced and is expected to continue. Using these assumptions we are able to peer into the future and estimate results for 1979. These are provided along with the data for 1978 and 1977.

The purpose in this example and the reason for including the additional year is to enable us to ask what data we might reasonably generate from historical data relevant to investor decisions. It is useful here to distinguish variables controllable by management from exogenous variables. The prime example in the latter category is inflation. Examples in the former category include the dividend rate, the debt-equity ratio, and the growth rate inter-alia. These are all, to a greater or lesser extent, under management's control. We shall make this distinction in a companion article to this.

But first we need to turn back to the other statements that are provided currently. The statement of financial position (Exhibit II) reflects a debt-equity ratio under 0.50 which is their current upper bound. GSN's return on equity for 1977 was 10% and for 1978 12%. The statement of changes in financial position (Exhibit III) shows that operations, coupled with an increase in long-term debt, provided sufficient funds in both years to cover expanded working capital needs, new investment, and a dividend of

60% of after-tax net income.

Numerous authors have pointed out that a financial review limited to these statements is potentially misleading. The usual reason is that they consist of a series of dollar amounts, all of different values, added together to produce meaningless aggregates. An equally common cause of criticism is that while capital might have been maintained in some nominal sense, real capital depletion might have occurred unwittingly.

Current cost accounting was designed to eliminate this latter problem. A current cost income statement may be found in Exhibit IV. Sustainable income is the difference between current revenue and current costs. It is the income that would be earned in the future if inflation were to abate. Exhibit V indicates the data that was used to arrive at the current cost of cost of goods sold. Exhibit VI indicates the way the current depreciation charge was calculated.

Sustainable income, no doubt, is a valuable number. Unfortunately, it suffers from several major drawbacks. Firstly, it is a peculiar number in that it begins by acknowledging the fact of inflation, but ends by assuming it away. To interpret it one has to make the completely unfounded assumption that inflation will cease. A far more reasonable assumption is that inflation will persist. The simplest assumption is that the future rate of inflation will equal the present. Alternatives exist such as weighted average of past rates, but a zero rate is wholly unreasonable.

Secondly, as stressed above, sustainable income is an estimate of future income. The problem is that, even if inflation were to cease, this income number, given present accounting practices, would only be realized when all assets had been replaced in current prices, i.e., in some 20 to 30 years time in general. While it is certainly useful to

know what longrun income might be, there is a more pressing need for an estimate of income in the year ahead.

To see the force of this consider the data in Exhibit VII and sustainable income as calculated in Case A. The assumption here is that inflation halts at the end of 1977. Given this assumption sustainable income of \$110 is the income that will be realized in 1979, i.e., two years later, when all the present assets have been retired. By contrast, in Case B, inflation continues. Sustainable income now is not an estimate of anything that is actually realized. It is not even a good estimate of next year's sustainable income.

The third problem that one faces is common to all income numbers. What if management has no intention of maintaining the firm by replacing these assets? The SEC solved this by the simple expedient of not requiring companies to estimate the replacement cost of assets that were not intended to be replaced. The FASB has proposed the use of current value, i.e., discounted cash flows, and not realizable values for these assets. Leaving aside the technical problems of estimating values, there is clear recognition here that capital maintenance and, therefore, net income is not a necessary good. As argued above, this suggests the use of a funds statement rather than an income statement to which we return later.

This last leads though into a fourth problem. Sustainable income as calculated here does not ensure real capital maintenance. There is first the well-known problem of a depreciation backlog. In Case B, Exhibit VII, for example, we require an additional charge to depreciation of \$53 to compensate for the inflation in 1978 not taken into consideration in calculating current depreciation for 1977. Even this does not suffice, however, since depreciation has been calculated on an average current cost basis and assets will have to be replaced on a year end basis. In

other words, accumulated depreciation would total \$1156, while the replacement cost at this point is \$1221. In short, payment of even adjusted sustainable income numbers does not guarantee capital maintenance.

The fifth problem is even more fundamental. It goes back to the earlier discussion of the decision to purchase assets and the nature of sunk costs. The decision to purchase any asset should be based on future cash flows, i.e., the decision to buy the initial asset at a cost of \$1,000 was based on the, then expected, net revenue flows of \$660 and \$726 respectively. The decision to purchase an asset at the start of 1979 for \$1221 is a function of the net revenue flows in 1979 and 1980. Net revenues and net income prior to 1979 and accumulated depreciation, however calculated, are totally and completely irrelevant. All that should be of interest is the prospective return.

The sustainable income calculation has the unfortunate connotation that past net income, albeit calculated on a current cost basis, is somehow relevant to the decision to replace an asset. Even if the depreciation charges were so calculated as to ensure accumulated depreciation equal to the purchase cost of a new asset, this would still be irrelevant. Sunk costs are sunk costs. Bygones are bygones. The cash generated by the initial asset belongs to the owners and, in the absence of transaction costs, should be paid to them. A decision to purchase a new asset would depend then on management convincing shareholders that prospective returns warrant it.

The calculation of current costs clouds this most important issue, unfortunately. It seems to suggest that the current measurement of past decisions is somehow or other relevant to present and future decisions. This obfuscation results because of the relating of current costs to past revenues. Current costs are indeed valuable information. They need to

be related, however, to future revenues. To achieve this, though, we need a new statement.

Rappaport (1979) appears to be groping towards this new statement. An example of his proposal may be found in Exhibit VIII. He terms this a distributable funds statement, which is really a misnomer since it is actually a modified sustainable income statement. This should be apparent from the numbers two-thirds of the way down which may be compared with those in Exhibit IV.

Once sustainable net income has been calculated, one has the sustainable funds (net of depreciation) that were available in the past year to fund increases in net working capital and to finance a dividend. It is only necessary to fund these two items, since the depreciation charges have already taken care effectively of investment over the year.

The traditional SCFP inserts the actual increase in working capital at this point as may be seen in Exhibit III where the increase for 1977 was \$259,000. Rappaport suggests that this figure is potentially misleading for two reasons. Firstly, the end-of-year net working capital figures may not reflect the normal working capital figures over the year. This might be due to window-dressing, but is more commonly due to the financial year-end being coincident with the end of an operating cycle. Secondly, the increase in working capital figures may overstate the new funds actually committed by the business in the past year. This is independent of inflation and is due solely to the allocation of fixed costs to inventory and receivables. These fixed costs represent prior expenditures of funds and do not involve outlays in the current year. What is required is an estimate of the incremental costs incurred during the past year to fund the increase in inventory and receivables.

To calculate the funds required, Rappaport assumes that the year-end

working capital levels are in fact normal for that year. In other words, he assumes away one half of the problem. To get at the second half of the problem, he first calculates the variable portion of the increase in inventory. In general, this will be smaller than the total increase in inventory. To calculate the variable portion in the increase in accounts receivable he uses the calculation set out in Exhibit IX. This is less than the actual increase in 1977 by \$163,570 and in 1978 by \$222,923. Subtracting these from the actual increase in working capital gives the new funds required and shown in Exhibit VIII.

Finally, Rappaport suggests the use of a debt capacity figure to estimate the debt that could have been raised to fund the shortfall and allow the payment of a dividend. We assume, as he did, that GSN has set a target bound of 50%. This would enable the company to borrow up to \$4,222,500 in 1977. Actual borrowing were less by an amount of \$14,500. This does not affect, however, the concept of a target level.

These calculations complete, Rappaport has an estimate of the funds available for distribution to shareholders. It is immediately apparent that on this basis, the company has been paying out dividends that were far too high. GSN simply did not have the funds to make this kind of distribution and maintain itself in real terms. Or does it?

The maintenance concept used here by Rappaport is that of business capacity maintenance. This he defines in the following terms:

In contrast with physical or productive capacity, business capacity includes not only productive facilities but also the company's net working capital requirements as an essential element of its ability to make and sell a certain volume of products and services. The business capacity maintenance concept also recognizes that going concerns frequently discontinue some products while introducing new products and expanding into new markets. Because the price changes for depreciable assets may differ, separate provision must be made for production capacity that management plans to replace and for capacity not expected to be replaced at the end of its economic

life. Finally, the business capacity concept recognizes that part of a company's operating capability is ordinarily financed by debt.

This definition of business capacity is an extremely useful one for two reasons. Firstly, it seems to underpin what has already been said about the dynamic nature of firms and of the economy. Firms do indeed discontinue products and abandon, dispose of, or run down fixed assets in the process. By the same token, firms do move into new markets. They also grow in these markets requiring more capital to do so.

The SEC recognized that certain assets would not be replaced and ruled that a current cost of zero should be placed on these assets. This made the resultant number incomparable with any other number since no disclosure was made of which assets would not be replaced. The FASB has now decided that such assets should be entered at the lower of value in use and net realizable value effectively. Rappaport has dealt with the problem by using an index to arrive at the current cost of assets that will not be replaced.

The problem, however, is more fundamental. It goes to the very heart of capital maintenance. If a firm has no intention of remaining in a particular line of business, the assets of that business should be disposed of over time and the proceeds returned to the owners of the firm. This line of business is declining, by design perhaps, but nevertheless de facto, and a liquidating dividend should be paid out. To talk of maintaining capital in a declining business is to talk of an accounting phantasmogoria. The business is declining in fact and accounting should not be used to conceal that fact.

Rappaport, the SEC, and the FASB acknowledge the fact of declining businesses and discontinued products, but proceed to hide it either by a lack of interpretable information or by burying the effect back into a

modified income statement. What they fail to bring out in the process is that capital maintenance simply does not make sense in a dynamic world.

This leads into the second reason why Rappaport's definition is a valuable one. It highlights one of the major deficiencies of current cost accounting, namely its failure to distinguish the past from the present. To see this note that the argument is phrased in terms of the productive capacity that management plans to replace. In other words, business capacity, like productive capacity and indeed financial capacity too, is concerned with future investment plans and to a limited degree with present investment plans.

But, the past is wholly irrelevant when one comes to speak of present and future investment plans. One invests today in the hope of returns tomorrow. Accumulated funds, no matter how calculated, should play no part in the decision to invest whatsoever. To suggest otherwise is to undermine the whole basis of a free enterprise economy.

By the same token, as argued earlier, accumulated depreciation is not a fund to finance investment. Rappaport's method excludes backlog depreciation so that even were it correct to interpret accumulated depreciation in this way, it would not be sufficient to replace assets. But depreciation is not to be interpreted this way.

We all pay lip-service to this fundamental fact that bygones are bygones and that investment depends only on future returns. Yet we continue to produce financial statements that match past revenues with future investment. In Exhibit IV, sales of \$15,643,000 earned during 1977 are matched with an end-of-year current depreciation expense of \$3,251,000. If this latter represents, as it does, the replacement cost of declining assets and therefore a new investment, it is totally inappropriate to match these new costs with old revenue. The new investment of \$3,251,000

can only be justified with respect to 1978 sales of \$17,427,000 and so on.

Even if we match sales, adjusted to end-of-year values, with costs adjusted to end-of-year values, we have merely circumvented the mechanical problem. We are still left with the conceptual confusion that arises from matching present investment with anything else but future returns. This confusion runs rampant in the popular press. Consider, by way of example, the following quite extraordinary statement from Business Week (p. 108, March 19, 1979)

U.S. corporations are literally throwing away money that they sorely need not only to pay current bills but also to bankroll future investment. As a result, they are forced to lean more heavily on external sources of funds. But even that has limits, particularly as profit margins and the ability to service rising levels of debt erode. Distress over declining profitability is precisely what is driving investors out of the stock market, say some analysts.
(my emphasis)

The context of this quote is the excessive, according to Business Week, taxation of corporate profits in a period of inflation. This, together with the payment of "unreasonable" and even "shocking" (their words) dividends constitute a drain on funds that is equated to throwing money away. This is money which apparently should be retained to finance future investment, which otherwise would not be funded because it is so unprofitable that investors will not touch it!

There are at least three outrageously wrong ideas floating about here. Firstly, firms seem to have been awarded a life of their own independent of the society, which permitted their birth, and the investors, who own their shares. Business forgets at its ultimate peril that firms are only intermediaries; that they live only while they satisfy the needs and aspirations of society; that monies in their keeping are there on trust and not by right.

Secondly, the quote seems to suggest that it is somehow immoral to pay back to shareholders the profits of the firm. The word shocking

is used to describe 1974 where 99% of sustainable net income was paid out in dividends. But why should it be wrong to turn back to shareholders the profits of the firm? Surely this belongs to them, by law if not by custom. To suggest otherwise is to defeat the whole basis on which our society was founded.

Thirdly, it would seem from the quote that the lowering of expectations of future profits has scared investors away. Management, apparently, must be allowed to retain funds, which otherwise would not be lent to it, to finance unprofitable projects. The mind quails at the prospect and all that it entails. Unfortunately, what evidence we have from Baumol et al suggests that management is already doing just that - using retained earnings to invest in projects promising negative returns.

It is very easy, of course, to take an article in the popular press to pieces. What is disturbing though is that we, who should and do know better, have aided and abetted in creating these monstrous caricatures of a free-enterprise, democratic economic system. By our insistence on net income as the measure of capital maintenance and our support for the idea that dividends be limited to income, in all circumstances, we have helped management to retain funds to which they had no right. Efficient firms have suffered at the hands of the inefficient as a result. The intermediary character of firms has been obscured as firms accumulated vast funds through retentions. Undesirable projects have been undertaken. In short, we have assisted in the demise of market discipline.

For, let us be quite clear, all the assertions of the popular press make perfectly good sense in a stationary economy containing firms with balanced stocks of assets. Annual depreciation is indeed equal to annual investment. Net income is equal to distributable funds and should be paid out as dividend. With the world stationary, shareholders' expectations would not change, and management would have no cause to seek their

advice, through a sharemarket, on investment strategy.

It is in such a world, and only in such a world, that net income makes complete sense. Our emphasis on it as the sine qua non of accounting seems to imply that we somehow believe that the world is stationary, or nearly so. Little wonder then that others misuse our statements. In a sense, we have invited them to do just that by our silence on matters which are of fundamental importance in a dynamic economy.

Nor have we helped matters when we introduced the notion of inflation accounting. Now, knowing full well that the economy was not stationary, we have persisted in and even embroidered on our maintenance myth. We know that what is of importance is only value maintenance. We know that the value of a firm is not the sum of its parts. Yet we propose to calculate net income based on a maintenance of value in some of its parts. And all the while we know too, and even state explicitly, that certain segments of the firm will not be maintained. The cure of inflation accounting appears to be worse than its bite.

With this in mind, we can turn back to Rappaport's proposed approach. We have noted thus far that he acknowledges the dynamic nature of the economy, but that he fails to capture this in his distributable funds statement. This was largely due to the fact that his statement is in essence a modified income statement - a statement of what funds are available for dividends once the business has been maintained.

This is not entirely true since Rappaport does make allowance for an increase in working capital. A large portion of this is the additional inventory that needs to be put in place to support the growth in sales. On the other hand, he does not allow for growth in plant and equipment. The funds that are restricted at this point are only those that permit capital maintenance. In other words, the statement is logically inconsistent. Certainly additional funds are needed to support the growth in

inventory, but then it should follow that funds should be restricted to permit growth in fixed assets. This is easily achieved, of course, by switching to a proper funds flow analysis.

The statement suffers as do all presently proposed inflation-adjusted statements, by matching yesterday's funds with tomorrow's investments. While it is true that new investment will involve inflationary prices, this new investment will generate, presumably, inflationary revenue. A distributable funds statement as presented here, paints a far too gloomy view of the financial prospects of the firm. This is equally true for a sustainable income statement, as proposed by the FASB, and as portrayed in Exhibit IV.

It is also true that, like the sustainable income statement, the distributable funds statement ignores unrealized cost savings. A portion of these will be realized the following year. To exclude them, adds needless, additional gloom to the prospects of the company. These gains are in fact important indicators of the near-term prospects of the firm. A firm sitting on a mountain of inventory purchased or produced in a period prior to the latest burst of inflation is in a potentially strong situation, which demands full disclosure.

Finally, the statement ignores the impact of monetary gains and losses. This would be fine if interest expense and income were adjusted to reflect the real cost of money. They are not and as a result expenses are overstated. To put it another way, the downside additions to expenses as a result of inflation have been recognized, but the upside gains have not been disclosed. This point has been well-made by Modigliani and Cohn (1979). Current Working Capital Statements: Given all the foregoing, it should be plain that the presently proposed solutions to inflation accounting are very unsatisfactory. To these more academic criticisms can be added

the almost wholly negative response of the business community to the current proposals. These are based on very practical considerations such as the virtual inability to arrive at a meaningful replacement cost of assets where replacement will take place over a twenty year horizon and perhaps not at all.

There is, however, a growing recognition that the solution to this and many other of our thorniest problems in accounting might lie in funds flow statements. Thomas (1974) has argued vociferously in favor of more allocation-free statements which a funds flow statement is. Heath and Rosenfeld (1979) have suggested that in our efforts to define net income we have forgotten to measure solvency. This is most easily achieved through a funds flow statement. Beaver and Demski (1978) claimed that net income could not even be defined in a multi-person environment under uncertainty. Hawkins (1979) is reported to have suggested that increasing use be made of funds flow statements. And in a recent speech, the SEC Chairman, Harold M. Williams, commented:

The flow of funds statement is becoming increasingly important to shareholders, and companies should consider enhanced disclosure. To an increasing number of investors, it is the most informative statement.

There is thus an evident groundswell in favor of increased emphasis in favor of increased emphasis on the funds flow statement.

The question then is how one might best proceed to convert the present statement of changes in financial position to reflect the impact of inflation. To do this, we need to establish first what our objectives are for this statement. These are five in number and very straightforward:

1. The statement should disclose to investors the impact of inflation on the performance of the company.

2. The statement should enable investors, as far as is possible, to distinguish between endogenous and exogenous events affecting the company, i.e., it should enable investors to assess management's performance separately from the effects of events beyond their control.
3. The statement should be a vehicle through which management can explain the events of the past period and disclose its intentions for the future.
4. The statement should capture the dynamic nature of the company, i.e., it should reveal the growth and decline of the company, intended or otherwise. In other words, it should avoid the potentially misleading implications of the income statement.
5. The statement should enable investors to predict future funds flow, in particular those of the year ahead.

To achieve these goals, a current working capital statement is proposed and presented in Exhibit X. Subsidiary calculations are shown in Exhibits XI and XII.

The bulk of the statement should be entirely self-evident. Its advantages over the presently proposed statements of the effect of inflation are categorized below. Prior to that, however, some explanatory comments are in order. Working our way down the statement then, the following observations may be made.

(a) Revenue for each year has been restated in start-of-year dollars using a price-index. This enables real growth to be distinguished from inflationary gains. Revenue of \$15,643 in 1977 is directly comparable with the adjusted revenue figure of \$16,287 in 1978. It reveals a real growth in revenue of 4% against a nominal growth of 11%.

(b) Cost of goods sold is shown at current cost at the time of sale. This corresponds to both the SEC and the FASB guidelines. This leads to a realized cost savings which is shown a few lines lower. Current costs plus realized savings equals realized costs, i.e., reported cost of goods sold.

(c) Taxes are allocated out over the statement. The sum of these intra-period allocations is reported tax expense. The allocation is designed to reveal the present tax-shield obtainable on historical cost depreciation and separately the tax-shield obtainable from debt financing. The allocation also reveals the extent to which realized cost savings are being taxed.

(d) Longrun sustainable funds corresponds to sustainable income or current income. Realized operating funds corresponds to reported net income. Both numbers exclude depreciation and interest expense. The former is standard practice. The latter is more unusual and is done so as to enable net debt financing to be identified.

(e) The debt financing section is new. The intent here is to identify monetary gains and losses over the period whose calculations are found in Exhibit XI. Nominal interest expense as reported less the monetary gain yields the real interest expense. Against this breakdown must be set the effect of the tax-shield to reveal the net realized cost of debt to the firm. The real interest expense less tax is a measure of the real cost of debt. This corresponds to the arguments of Modigliani and Cohn that monetary gains and losses should be excluded from interest expense calculations.

(f) The equity financing section is new, but self-evident. The intent here is to reveal the net transactions with shareholders. This helps to make explicit the occasional situations where a firm finances

its dividends by an equity issue.

(g) The capital expenditure section is new. Reported capital investment is split into two pieces. The first deals with replacement of assets. The second with new investment. A third category would involve the gain on the sale of assets which are not replaced. These categories should be distinguished from those of the SEC, FASB and Rappaport. Their categories are assets that will be replaced and those that will not. Our categories are defined ex post and not ex ante. Their latter category is our last. Their former category is our first. They make no allowance for new investment which is our second category. The introduction of this category enables us to capture something of the dynamics of the firm. More on this is said later.

(h) The inventory section is new. Three numbers are shown here. The first when added to reported opening inventory gives opening inventory at end-of-year replacement cost. The second when added to the current cost of opening inventory gives end-of-year replacement cost of closing inventory. The third number, the unrealized cost savings, when subtracted from this last, yields the reported FIFO figure. A more detailed explanation of these numbers is found in Exhibit XII.

(i) The change in net quick assets i.e., working capital less inventory is the remaining plug figure.

Advantages: With the details of the proposed new statement in hand, we are now in a position to begin to describe some of its advantages over previous efforts in this area. Firstly, this is not, nor is it intended to be, an income statement.

The virtue of this is that we escape the whole dilemma of pretending to measure the maintenance of capital. We have long since abandoned the notion that accounting depreciation is anything more than an allocation

of original costs over time. We should not be ashamed to recognize then that accounting net income, whether adjusted or unadjusted, is not Hicksian income at all, but a complex matching of revenues and expenses. Recognition of our inability to measure income frees us to pursue more informative alternatives.

The growth and decline of a firm, which is so noticeably absent in an income statement, is captured here. In particular, the split in the asset section between replacement, disposal, and new investment enables investors to see where resources were allocated. This can only strengthen the going-concern principle of reporting.

It is an ex post statement. Management knows what happened this past year. All the figures reported are available or easily calculable making the statement objectively verifiable and even subject to audit. No estimates of future replacement costs are asked for. There are no what if's that so bedevil replacement cost accounting as proposed by the FASB and the SEC.

It is a statement that involves realized numbers. It contains all the information contained in a regular historically-based statement of changes, which ideally it should replace. All the inflation breakouts reconcile back to realized numbers making it easily interpretable. This ability to reconcile all the numbers back to original cost serves to strengthen the cost principle.

No attempt is made to calculate a real funds flow on the lines of sustainable income. All the basic details are there though for those who so desire such a number. In other words, the statement reflects ex post the impact of inflation without making any claims as to the best number for analysis.

However, if one is to choose a number, perhaps the sum of the change in net quick assets and the dividend is the number most suited to financial

analysis. Net income is used sometimes, apparently, to calculate the value of a company via a P/E ratio. The method implies the capitalization of profits. But, one of the most basic assertions of capital budgeting is that one capitalizes cash flows, not profits. The proposed sum is a far better surrogate for this number than net income, no matter how calculated.

The statement also has the advantage of putting each element of inflation into perspective. Monetary gains and losses are associated with debt financing as is appropriate. Inventory holding gains are related to new investment in inventory. Holding gains on fixed assets are excluded, but the known gap between original and replacement cost is shown. Again this puts the impact of inflation into perspective.

It should be noted too that the format permits easy forecasting. This is taken up at greater length in a companion piece to this article. It should be immediately clear though that by simply extending each row using this last period's growth and inflation rates, or appropriately chosen averages, one can derive a basically meaningful projection, which again could be audited. The advantage of this format too is that management is not forecasting profits. In fact the only figure that would need to be plugged is management's estimate of planned investment. Anecdotal evidence suggests that management would disclose this without too much concern.

Importantly, the statement does not match the income of this past year with the replacement costs of next year. This year's investment is shown in association with this year's funds. This is still not the perfect match, but it does bring us closer in to line with the correct cause-and-effect chain. Investment should precede funds, not the other way around.

Finally, the statement does not promise what it cannot deliver. There is no attempt to measure income. There is no attempt to measure real funds flow. There is no attempt to predict the future. All that the statement does is to break out inflation on an ex post basis. But, it does this in a way that is sufficiently informative to enable investors to see both where their company is moving and what the impact of inflation was on its results.

Exhibit I

Statement of income, 000 (year ended December 31)

	1977	1978	1979*
SALES	\$ 15,643	\$ 17,427	\$ 19,806
COSTS AND OTHER EXPENSES:			
Cost of goods sold (exclusive of depreciation)	7,842	8,736	9,929
Selling, general, and administration expenses	2,282	2,606	3,175
Depreciation	3,038	3,214	3,526
State, local, and miscellaneous taxes	416	450	507
Interest and other expenses on debt	259	409	384
Total	\$ 13,837	\$ 15,415	\$ 17,521
INCOME BEFORE TAXES	\$ 1,806	\$ 2,012	\$ 2,285
Provision for taxes on income	867	966	1,097
NET INCOME	\$ 939	\$ 1,046	\$ 1,188
CASH DIVIDENDS	\$ 564	\$ 628	\$ 713

*This is a pro-forma statement.

Exhibit II

Statement of financial position, 000 (at year-end)

	1977	1978
CURRENT ASSETS		
Cash	\$ 1,304	\$ 1,452
Receivables, less allowance for losses	3,911	4,358
Inventories	2,079	2,358
Total	7,294	8,168
CURRENT LIABILITIES	4,694	5,228
NET WORKING CAPITAL	2,600	2,940
PROPERTY, PLANT AND EQUIPMENT-NET*	10,053	11,378
Total	\$ 12,653	\$ 14,318
LONG-TERM DEBT	\$ 4,208	\$ 5,455
STOCKHOLDERS' EQUITY	8,445	8,863
Total	\$ 12,653	\$ 14,318

*Gross amounts are \$16,070,000 and \$17,630,000 for 1977 and 1978 respectively.

Exhibit III

Statement of changes in financial position

	1977	1978	1979*
FINANCIAL RESOURCES WERE PROVIDED:			
From operations			
Net income	\$ 939	\$ 1,046	\$ 1,188
Depreciation	3,038	3,214	3,526
Total	\$ 3,977	\$ 4,260	\$ 4,714
From other sources			
Increase in long-term debt	703	1,247	(209)
Increase in stockholders' equity			2,000
Total	\$ 4,680	\$ 5,507	\$ 6,505
FINANCIAL RESOURCES WERE USED FOR:			
Capital expenditures	\$ 3,857	\$ 4,539	\$ 5,343
Dividends	564	628	713
Increase in net working capital	259	340	449
Total	\$ 4,680	\$ 5,507	\$ 6,505

*This is a pro-forma statement.

Exhibit IV

Sustainable income, 000 (year ended December 31)

	1977	1978	1979*
SALES	\$ 15,643	\$ 17,427	\$ 19,806
COSTS AND OTHER EXPENSES:			
Cost of goods sold (exclusive of depreciation) at replacement cost	7,972	8,882	10,094
Selling, general and administrative expenses	2,282	2,606	3,175
Depreciation at replacement cost	3,251	3,622	4,117
State, local and miscellaneous taxes	416	450	507
Interest and other expenses on debt	259	409	384
Total	\$ 14,180	\$ 15,969	\$ 18,277
INCOME BEFORE TAXES	\$ 1,463	\$ 1,458	\$ 1,529
Provision for taxes on income ⁺	864	966	1,097
SUSTAINABLE INCOME	\$ 596	\$ 492	\$ 432
CASH DIVIDENDS	\$ 563	\$ 628	\$ 713

*This is a pro-forma statement.

⁺No adjustment for taxes has been made.

Exhibit V

Cost of goods sold excluding depreciation
expense (at current replacement cost)*

	1977	1978
Opening inventory	\$ 1,863	\$ 2,079
Plus: Realized cost savings	130	146
Plus: Purchases	8,058	9,015
Less: Closing inventory (adjusted)	(2,141)	(2,429)
Plus: Unrealized cost savings	62	71
Current cost of goods sold	\$ 7,972	\$ 8,882

*The example assumes the use of FIFO and a 3% inflation increase from the time of purchase to the end of the year.

Exhibit VI

Depreciation expense (at current replacement cost)*

	1976	1977	1978
Facilities expected to be replaced	\$ 11,913,300	\$ 12,793,300	\$ 14,353,300
Facilities not expected to be replaced	3,276,700	3,276,700	3,276,700
Property, plant, and equipment - gross	\$ 15,190,000	\$ 16,070,000	\$ 17,630,000
Depreciation expense on facilities expected to be replaced: historical cost	\$ 2,382,660	\$ 2,558,660	\$ 2,870,660
: replacement cost	2,549,446	\$ 2,796,600	\$ 3,145,600
Depreciation expense on facilities not expected to be replaced: historical cost	\$ 53,340	\$ 655,340	\$ 655,340
: current cost	\$ 701,214	\$ 825,400	\$ 971,400
Total "current" depreciation	\$ 3,250,660	\$ 3,622,000	\$ 4,117,000

*Straight-line depreciation over 5 years has been used throughout. For details of current cost calculations see Rappaport (1979).

Exhibit VII:

Sustainable income example.

Asset purchased at start of 1977 for \$1,000
 Life - 2 years. Straight line depreciation.
 No residual value.

Case A: Inflation of 10\$ in 1978 only.

	1977	1978	1979		1977
Net revenue	\$ 660	\$ 660	\$ 660	Net revenue	\$ 660
Historical depreciation	<u>500</u>	<u>500</u>	<u>550</u>	Current depreciation	<u>550</u>
Net income	<u>\$ 160</u>	<u>\$ 160</u>	<u>\$ 110</u>	Sustainable income	<u>\$ 110</u>

Note: Current depreciation based on year end cost.

Case B: Continuing inflation of 10\$.

	1977	1978	1979		1977	1978
Net revenue	\$ 660	\$ 726	\$ 499	Net revenue	\$ 660	\$ 746
Historical depreciation	<u>500</u>	<u>500</u>	<u>611</u>	Current depreciation	<u>525</u>	<u>578</u>
Net income	<u>\$ 160</u>	<u>\$ 226</u>	<u>\$ 188</u>	Sustainable income	<u>\$ 135</u>	<u>\$ 148</u>

Note: Current depreciation based on average cost for year.

Exhibit VIII

Statement of distributable funds.

	1977	1978
NET INCOME AFTER TAXES	\$ 939	\$1,046
FUNDS REQUIRED FOR INCREASES IN COSTS OF PRODUCTIVE CAPACITY		
Depreciation expense (at current replacement cost) for production capacity expected to be replaced (see Exhibit VI)	\$2,549	\$2,797
Less historical-cost depreciation	<u>2,383</u>	<u>2,559</u>
Additional depreciation	166	238
Depreciation expense (at current price levels) for production capacity not expected to be replaced (see Exhibit VI)	701	825
Less historical-cost depreciation	<u>655</u>	<u>655</u>
Additional depreciation	46	170
Cost of goods sold (at current replacement cost)	7,972	8,882
Cost of goods sold (at historical cost)	<u>7,842</u>	<u>8,736</u>
Additional costs to replace goods sold	<u>130</u>	<u>146</u>
Net sustainable income	\$ 597	\$ 492
FUNDS REQUIRED FOR INCREASE IN NEW WORKING CAPITAL	95	117
LESS FUNDS AVAILABLE VIA INCREASED DEBT CAPACITY	<u>718</u>	<u>(1,023)</u>
Total	\$ (623)	\$ (1,140)
DISTRIBUTABLE FUNDS	1,220	\$ (648)
LESS DIVIDENDS	<u>564</u>	<u>628</u>
FUNDS AVAILABLE FOR EXPANSION	<u><u>656</u></u>	<u><u>\$ (1,276)</u></u>

Exhibit IX

Increase in net working capital calculation.

	1977	1978
Cost of goods sold	\$7,842,000	\$8,736,000

Assume all variable cost.

Variable increase in accounts
receivable

$$= \text{Increase in accounts receivable} \times \frac{\text{Variable cost of goods sold}}{\text{Sales}}$$

$$= 328 \times \frac{7,842}{15,643} = \$164,430 \text{ (1977)}$$

$$= 447 \times \frac{8,736}{17,427} = \$224,077 \text{ (1978)}$$

Exhibit X

Current Working Capital Statement

	1977	1978
FUNDS FROM OPERATIONS:		
Constant dollar revenue	\$14,620	\$16,287
Inflation increase	1,023	1,140
Revenue	\$15,643	\$17,427
Cost of goods sold (exclusion of depreciation) at current cost	7,972	8,882
Selling, general, and administration expenses	2,282	2,606
State, local and miscellaneous taxes	416	450
Federal taxes on sustainable funds	2,387	2,635
Less: Tax shield due to depreciation	1,458	1,543
Longrun sustainable funds	\$ 4,044	\$ 4,397
Realized cost savings	130	146
Less: Federal taxes on cost savings	62	70
Realized operating funds	<u>\$ 4,112</u>	<u>\$ 4,473</u>
DEBT FINANCING:		
Increase in long-term debt	703	1,247
Interest charges net of monetary gain	(36)	207
Monetary gain/(loss)	295	202
Less: Tax shield due to interest	124	196
Net interest expense	135	213
Net debt financing	<u>\$ 568</u>	<u>\$ 1,034</u>
EQUITY FINANCING:		
Increase in capital stock	-	-
Dividend payment	564	628
Net equity financing	<u>\$ (564)</u>	<u>\$ (628)</u>
Total	<u>\$ 4,116</u>	<u>\$ 4,879</u>
CAPITAL EXPENDITURES:		
Original book value of replaced assets	\$ 2,979	\$ 2,979
Inflation exercise	209	223
Less: Disposal value	-	-
Net replacement cost	\$ 3,188	\$ 3,203
Net investment	669	1,336
Gross investment	<u>\$ 3,857</u>	<u>\$ 4,539</u>
Inflation adjustment to opening inventory	189	212
Inventory increase at replacement cost	89	138
Less: Unrealized cost savings	(62)	(71)
Net additions to inventory	<u>\$ 216</u>	<u>\$ 279</u>
Total	<u>\$ 4,073</u>	<u>\$ 4,818</u>
Increase in quick assets	43	61
Total	<u>\$ 4,116</u>	<u>\$ 4,879</u>

Exhibit XI:

Monetary gains/(losses)

	1977	1978
Opening monetary assets x 1.07	\$ (3,239)	\$ (3,945)
Plus: Revenue x 1.035	16,191	18,647
Less: Purchases x 1.035	(8,340)	(9,330)
Expenses x 1.035	(2,362)	(2,697)
Investment x 1.07	(4,127)	(4,857)
End of year expenses	(2,105)	(2,453)
Total	<u>\$ (3,982)</u>	<u>\$ (4,635)</u>
Closing monetary assets	(3,687)	(4,387)
Net monetary (gain)/loss	<u>\$ (295)</u>	<u>\$ (202)</u>

Exhibit XII

Inventory calculations

1976 Inventory $\$1,863 \times 1.07 \times 1.03 = \$2,052$
1977 Inventory $\$2,079 \times \quad \times 1.03 = 2,141$
Inflation gains on 1976 inventory $= 2,052 - 1,863 = 189$
Additional inventory at current cost $= 2,141 - 2,052 = 89$
Unrealized gain $= 2,141 - 2,079 = 62$

1977 Inventory $\$2,079 \times 1.07 \times 1.03 = \$2,291$
1978 Inventory $\$2,358 \quad \times 1.03 = 2,429$
Inflation gains on 1977 inventory $= 2,291 - 2,079 = 212$
Additional inventory at current cost $= 2,429 - 2,291 = 138$
Unrealized gain $= 2,429 - 2,358 = 71$

Bibliography

- Baumol, W. J., P. Heim, B. G. Malkiel, and R. E. Quandt, "Earnings Retention, New Capital and the Growth of the Firm," Review of Economics and Statistics, 52: 345-355, 1970.
- Baumol, W. J., P. Heim, B. G. Malkiel, and R. E. Quandt, "Efficiency of Corporate Investment: Reply," Review of Economics and Statistics, 55: 128-31, 1973.
- Beaver, W. H. and J. Demski, "The Nature of Income Measurement," The Accounting Review, 54: 38-46, January 1979.
- Financial Accounting Standards Board, "Financial Reporting and Changing Prices, Exposure Draft, December 28, 1978.
- Heath, L. C. and P. Rosenfeld, "Solvency: The Forgotten Half of Financial Reporting," Journal of Accountancy, January 1979, pp. 48-54.
- Hicks, J. R., Value and Capital, Oxford: Clarendon Press, 1946.
- Jevons, W. S., The Theory of Political Economy (1871), Harmondsworth, England: Penguin Books, 1970.
- Modigliani, F. and R. A. Cohn, Inflation, Rational Valuation, and the Market, Mimeographed, Boston: MIT, 1979.
- Rappaport, A., "Measuring Company Growth Capacity during Inflation," Harvard Business Review, 57: 91-100, January-February 1979.
- Thomas, A. L., The Allocation Problem: Part Two, American Accounting Association, Studies in Accounting Research No. 9, 1974.

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